

TEAR FILM STABILITY AND DRY EYE SYMPTOMS ACROSS MENSTRUAL PHASES IN YOUNG PREMENOPAUSAL WOMEN

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ABSTRACT

The high prevalence of dry eye disease (DED) among women highlights potential influences from hormonal fluctuations during reproductive phases, such as the menstrual cycle, on tear stability and dry eye symptoms. This cross-sectional study investigated tear film stability, secretion, and dry eye symptoms in 40 premenopausal young Malaysian women (aged 20–24 years) with regular menstrual cycles, analyzing variations between the luteal and ovulation phases. Tear film stability was assessed using Tear Break-Up Time (TBUT), with a median of 6.00 seconds pre-menstruation (IQR: 3.70–7.93) and 5.15 seconds post-menstruation (IQR: 3.78–7.83). Tear secretion, measured by the Schirmer I test, showed a slight increase from a median of 23.00 mm before menstruation to 28.50 mm after, though this difference was not statistically significant. Dry eye symptoms were assessed using the Malay version of the Ocular Surface Disease Index (OSDI), with median OSDI scores of 8.33 (IQR: 4.17–22.40) before menstruation and 8.33 (IQR: 2.08–14.58) after. Wilcoxon Signed-Rank tests found no significant changes across phases for OSDI scores, TBUT, or tear secretion. Additionally, a weak correlation ($\rho = -0.142$) between subjective dry eye symptoms and TBUT highlights the complex relationship between hormonal fluctuations and tear dynamics. These findings suggest that menstrual cycle phases alone may not have a substantial impact on tear parameters, emphasizing instead the importance of lifestyle and environmental factors in managing dry eye symptoms. Future studies should include environmental and lifestyle factors, such as humidity and screen time, to enhance DED management in premenopausal women, allowing for more personalized care and improved outcomes.

Keywords: Menstrual Cycle, Tear Film Stability, Dry Eye Symptoms, Premenopausal Women.